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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,328	11/27/2001	Ralf Bertram	Mo-6855/HR-285	9683

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EXAMINER
ZUCKER, PAUL A

ART UNIT	PAPER NUMBER
1621	

DATE MAILED: 06/17/2003 12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/995,328	BERTRAM ET AL.	
	Examiner	Art Unit	
	Paul A. Zucker	1621	

-- The MAILING DATE of this communication appears n the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,4 and 6-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,4 and 6-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 01 April 2003 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/995,328 is acceptable and a CPA has been established. An action on the CPA follows.

Current Status

2. This action is responsive to Applicants' amendment of 12 March 2003 in Paper No 9.
3. Receipt and entry of Applicants' amendment is acknowledged.
4. Applicant's addition of new claim 10 is acknowledged.
5. Claims 3,4 and 6-10 are pending.

Objections and Rejections

Claim Objections

6. Claim 3 is objected to because of the following informalities: The extra spaces on the first line of step (b) should be removed. Appropriate correction is required.
7. Claims 4 and 6-10 are objected to because of the following informalities: The first word of each of these claims should be changed from "A" to "The". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 3, 4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelzer et al (US 5,585,091 12-1996) in view of Wang et al (Paper American Chemical Society, 220th, POLY-416, 03-2000) and Heywang et al (US 5,473,079 12-1995).

Instantly claimed is a process for the synthesis of phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt comprising the step of reacting o-phenylene-diamine with terephthalic acid and chlorosulfonic acid in the presence of strong acids, wherein the reaction time is 10 to 15 hours and its subsequent purification in which the product in a first step, is dissolved in water and treated with activated carbon, which is then separated off, and where the phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt is precipitated out by adding sodium chloride and separated off and, in a second step, is again dissolved in water and again treated with activated carbon, which is then again separated off, where pure phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt precipitates out of the filtrate by acidification and is then optionally also purified.

Pelzer teaches (Column 17, lines 28-57) a process for the synthesis of phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt in which o-phenylenediamine is reacted with terephthalic acid, chlorosulfonic acid and concentrated sulfuric acid at 120°C. Pelzer further teaches (Column 17, lines 38-40) a solution of the product of the reaction in water at 80°C and treatment with activated carbon with heating. The teaching of heating encompasses the instant claimed temperature ranges since a range above room temperature to less than boiling is assumed. The instantly claimed repetition of the treatment with activated charcoal is obvious over Pelzer's teaching of the first treatment since it would require only routine experimentation by one of ordinary skill in the art to determine whether the first treatment was incompletely successful in the removal of susceptible impurities. Pelzer additionally teaches (Column 17, lines 38-40) the formation of the sodium salt via treatment with sodium hydroxide solution. Pelzer further teaches (Column 17, lines 40-41) precipitation of the product by acidification with sulfuric acid. Pelzer also suggests (Column 15, line 24) the equivalence of sulfuric and phosphoric acids in his process (Cf. instant claim 9). Pelzer teaches that a product is obtained that is 99% pure contaminated only by 1% of the trisulfonic acid. Because Pelzer is silent with regard to the color of the product salt the Examiner assumes that the product is not colored.

The difference between the process of Pelzer and the instantly claimed process is that Pelzer teaches reaction times of 30 minutes at 180 °C while the instant process claims reaction times of 10-15 hours.

It would, however, have been obvious to one of ordinary skill in the art to modify the process of Pelzer by extending the reaction time to complete the sulfonation of the product that Pelzer teaches contains 1% of the product of incomplete sulfonation. The instantly claimed process is therefore obvious over the teaching of Pelzer.

Pelzer also does not teach the use of sodium chloride in the neutralization/precipitation step. The instantly claimed process claims the use of sodium chloride to precipitate the disodium salt. The Examiner notes that the open "comprising" language allows the use of sodium hydroxide as taught by Pelzer as well.

Wang , however, teaches (Abstract, lines 1-7) the sulfonation of aromatic compounds and generation of the corresponding sodium sulfonate salts via neutralization with a mixture of sodium chloride and sodium hydroxide.

Both Wang and Pelzer are silent with regard to acidification in the second step to pH 3 with hydrochloric acid as claimed in instant claim 8.

Heywang, however, teaches (Column 4, line 65 – column 5, line 32) a closely related process for the synthesis of 2-phenylbenzimidazole-5-sulfonic acid. Heywang further

teaches (Column 4, line 65 – column 5, line 32) the acidification to pH 3 with hydrochloric acid to produce the final product.

Thus the instantly claimed process would have been obvious to one of ordinary skill in the art. The motivation would have been to create an improved process for the production of a commercially important sunscreen component. The instant process corresponds to the process of Pelzer modified to improve the recovery of the product sodium sulfonate salt as suggested by the teachings of Wang and Heywang. There would have been a reasonable expectation for success because of the closely related chemistry shared by the references.

Examiner's Response to Applicants' Arguments with Regard to This Rejection

9. Applicants have put forth several arguments with regard to this rejection. The Examiner responds to these below:

    a. Applicants argue that the Examiner is assuming that the purpose of the invention is to improve the product yield but in fact the purpose is to produce a product free of impurities that discolor it. In response, the Examiner points out that the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

    b. Applicants further argue that one of ordinary skill in the art would expect that discoloring impurities would increase with extended reaction times rather than

decrease. The Examiner responds that this general statement is not necessarily true and contains the implicit assumption that products of the reaction are unstable under prolonged exposure to the reaction conditions. Whether this assumption is correct or not will depend upon the particular process. In the instant case there is no evidence on record that would lead one of ordinary skill in the art to expect an increase in impurities with extended reaction times.

c. Applicants argue that the differences in the respective products resulting from the processes of Pelzer and the invention are differences in kind and not just amount. To this the Examiner responds that, on the basis of the disclosure, the Examiner is not able to assess any differences in outcome (degree *or* kind) between the prior art process and that of the invention since Applicants have presented no comparative data. Applicants are invited to provide a side-by-side comparison of the processes of Pelzer and the for the Examiner's consideration.

d. Applicants argue that the secondary references, Wang and Heywang, address different compounds and do not remedy the deficiencies of Pelzer. The Examiner points out that Wang and Heywang teach aspects of processes involving sulfonates and sulfonic acids and are cited for their generic teachings. Neither reference addresses limitations that would establish patentability over the process of Pelzer in the absence of unexpected results.

Applicants themselves recognize (Amendment, page 7, last paragraph) this in the concluding paragraph.

Applicant's arguments filed 12 March 2003 have been fully considered but they are not persuasive for the reasons indicated above.

Conclusion

10. Claims 3,4 and 6-10 are pending. Claims 3,4 and 6-10 are rejected. Claims 4 and 6-10 are objected to.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Zucker whose telephone number is 703-306-0512. The examiner can normally be reached on Monday-Friday 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703-308-4532. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4556 for regular communications and 703-308-4556 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

Paul A. Zucker
Patent Examiner
Technology Center 1600

June 13, 2003

Johann Richter, Ph.D., Esq.
Supervisory Patent Examiner
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